n = 432 pts	lat	inf	sep	ant	apex
decreased perfusion	19	73	52	126	10
no change	335	288	295	193	207
increased perfusion	78	71	85	113	215

Conclusion: Breast repositioning studies suggest that BA affects SPECT myocardial perfusion imaging in the majority of women. Although the greatest frequency of change in perfusion occurs in the anterior segment, the breast attenuation influences all segments.

1010-63 Sex Related Differences in the Response and Diagnostic Accuracy of Dipyridamole Myocardial Perfusion Scintigraphy

James R. Lucas, Poonam Agarwal, Michael W. Dae, Elias H. Botvinick. *The University of California, San Francisco*

We sought to identify any sex based differences in the symptomatic, hemodynamic, and electrocardiographic response to, and the diagnostic accuracy of, dipyridamole perfusion scintigraphy (DPS). We compared the hemodynamic response and image findings in 391 consecutive patients, 236 males and 155 females, who had DPS and Selective Coronary Angiography within 3 months for clinical indications.

There were no sex related differences in the prevalence of prior myocardial infarction, the frequency, intensity or nature of induced symptoms, blood pressure or electrocardiographic ST changes. On Selective Coronary Angiography, 90% of men and 86% of women had coronary disease (p = NS). Among the 391 patients, there were 162 with triple, 108 with double, and 76 with single vessel disease. There were no sex related differences in coronary disease extent (i.e. 1, 2 or 3 vessel involvement), or stenosis severity (i.e. $70\% < x < 90\%$ or $\geq 90\%$). There were also no sex related differences in the incidence of fixed or reversible scintigraphic defects. In men compared to women, the overall diagnostic sensitivity (93% vs. 92%) and specificity (60% vs. 77%), and per vessel sensitivity (327/474, 69% vs. 214/297, 72%) were not significantly different, nor were sensitivities for single (41/47, 87% vs 25/29, 86%), double (61/66, 92% vs. 38/42, 90%) or triple (96/100, 96% vs. 59/62, 95%) vessel coronary disease. Per vessel specificity was greater for women when compared to men (141/168, 84% vs. 165/234, 71%) $p < 0.05$, as well as circumflex disease sensitivity (58/91, 64% vs. 65/145, 45%) and specificity (59/84, 92% vs. 73/91, 80%) ($p < 0.05$).

These results suggest that there is no sex related differences in dipyridamole induced symptoms or the related hemodynamic or electrocardiographic responses. The mechanism and diagnostic accuracy of DPS in women is equal to or greater than that in men across a broad spectrum of coronary artery disease.

1010-64 Left Ventricular Size Effects the Diagnostic Accuracy of SPECT Thallium-201 Perfusion Imaging in Both Men and Women

Christopher L. Hansen, Betsie Figueroa, Vincent Sorrell. *Temple University Hospital, Philadelphia, PA*

The diagnostic accuracy of SPECT Tl-201 for coronary artery disease (CAD) is lower in women (F) than in men (M). Previous investigators have suggested a Bayesian explanation. More recently, it has been suggested that smaller left ventricular mass in women was the cause. The current study was undertaken to assess the effect of left ventricular size (LVsize) on the accuracy of SPECT Tl-201. For this study patients who had either less than 5% pretest probability of CAD (nls) or had cardiac catheterization performed within 45 days of stress thallium testing without an intervening cardiac event (pts) were identified. We excluded patients with pathologic Q waves, documented prior infarction, LBBB on EKG, prior CABG or non-ischemic cardiomyopathy. We identified a total of 259 subjects (153 M, 106 F). Patients with <50% stenosis on cath were analyzed as nl. Twenty M and 20 F were taken from the nls and processed separately to create normal limits. Images were reconstructed with a Hanning filter. The fraction of the left ventricle less than 1, 2, 2.5, 3 and 4 standard deviations was calculated and used to calculate the area under the receiver operating characteristic (ROC) curves using the Dorfman maximum likelihood technique. A measure of left ventricular size was generated from short axis slice diameter and the number of slices. The number of stenosed vessels (2.0 ± 0.8 vs. 1.9 ± 0.9, p = NS) and worst stenosis ($91 \pm 12\%$ vs. $89 \pm 15\%$, p = NS) were similar for M and F. M exercised to higher workloads (estimated METS 6.7 ± 3.1 vs. 4.3 ± 2.3, $p < 0.0001$) but similar peak heart rates (HR) and percent of maximal predicted HR (133 ± 19 vs. 130 ± 22 and $78 \pm 11\%$ vs. $79 \pm 13\%$, both p = NS). The LVsize was greater in men (105 vs. 79 $p < 0.001$). The area under the ROC curves for M was marginally greater than F (0.92 vs. 0.82 $p = 0.10$). LV size significantly affected accuracy; the ROC area for M and F with LVsize >75 was much greater than for those <75 (0.89 vs. 0.64 $p = 0.007$). There was no significant difference in accuracy between M and F with LVsize >75 (0.91 vs. 0.85, $p = 0.47$). We conclude that a small LVsize significantly reduces the accuracy of SPECT Tl-201 in M and F, but since F have, on average, smaller LVsize, they are more likely to be affected.

1010-65 Predicting Adverse Outcome in a Mixed Population with Exercise SPECT Sestamibi (MIBI) Scans

Tim S. Boyne, Bruce A. Koplan, William Parsons, William H. Smith, Denny D. Watson, George A. Beller. *University of Virginia, Charlottesville, Virginia*

There is widespread use of MIBI for the diagnosis of coronary artery disease (CAD) because of favorable imaging characteristics including better tissue penetration and less attenuation with obesity or breast tissue. There is little data available on the utility of exercise SPECT MIBI in predicting long-term outcome. We sought to determine our ability at predicting adverse events in a typical population with comparable distribution of males and females. In 1992, 255 consecutive patients (126 female) had exercise SPECT MIBI scans for evaluation of chest pain syndrome, CAD, or myocardial infarction (MI). Acquisition of perfusion images was accomplished with a single head Sophy DS7 camera using 32 projections over a 180 degree body contour orbit at 25 seconds/step, and energy window peaked at 140 keV (20% symmetry). A low energy all purpose collimator was used and processing was performed on a Sophy computer. Clinical readings were reviewed and scored by independent observers as normal (NL), or abnormal (AB). Follow-up was performed by written questionnaire, telephone interview, and review of clinic charts. The events, non-fatal MI and cardiac death, were corroborated by chart review or physician contact when possible. Patients (pts) were excluded from analysis if they had revascularization within 1 month of imaging. The follow-up interval was defined as time from scanning until an event, late revascularization, or patient response. Follow-up averaged 18 months and was ≈92% complete with no significant difference in response rate or time noted between gender or scan score. In total, there were 172 NL scans (i.e. 67%), and 83 AB scans (33%). Of the 255 pts, 2/172 NL, and 6/83 AB had clinical events. Statistical analysis using the Kaplan-Meier survival curve suggests a significant difference in event free survival between NL and AB scans with AB scans portending worse outcome ($t = 8.0484$, Chi square $p < 0.005$).

Conclusion: exercise SPECT MIBI scans do predict adverse outcome in a typical referral population with a high prevalence of women.

1010-66 Comparison of Supine and Upright SPECT Myocardial Perfusion Imaging

Lynne L. Johnson, E. Lindsey Tauxe, Kristi R. Smith. *University of Alabama at Birmingham, Birmingham, Alabama*

Cardiac tomography can be performed in the upright position using a stationary small FOV multicrystal camera (MCC) and a rotating chair. The chair both rotates and jogs to improve spatial resolution of the MCC. To investigate the diagnostic accuracy of this imaging technique compared to conventional supine SPECT, 25 patients with CAD (23 M, 2 F, mean age $= 58 \pm 10$ years, 11 with prior MI) and 18 subjects with low pretest probability for having disease (9 M, 9 F, mean age 49 ± 11 years) underwent a one day rest/stress, low dose/high dose Tc-99m sestamibi study with sequential supine and upright SPECT imaging performed following rest and stress injections. Mean treadmill time for patients $= 7.8 \pm 2.1$ mins, peak HR $= 143 \pm 17$, and 11 were electrically positive. Mean treadmill time for subjects was 8.9 ± 3.4 mins, peak HR $= 166 \pm 17$. Recent coronary angiography was performed in 17/23 CAD patients with 34 lesions >50%. Each tomogram was divided into 7 segments and each segment scored as normal, reversible, or fixed. The agreement between the 2 sets of scans was 98% and the segment agreement with regard to reversibility was 90%. Supine SPECT detected 21/23 (91%) of patients with CAD, the chair detected 20/23% (87%). The chair detected 18/34 (53%) CA lesions, supine detected 20/34 (59%). Sensitivity and specificity for the chair was 88%, and 100%, and for supine was 92%, and 100%. In conclusion, in this small population, there were no significant differences between supine and upright SPECT imaging for diagnosing CAD, identifying individual stenoses, or identifying defect reversibility.

1010-67 Effect of Subcutaneous Implantable Cardiac Defibrillator Patches on Tl-201 Myocardial Imaging

Neshe E. North, Robert W. Nance Jr, Jeffrey S. Stevens, Blair D. Halperin, Richard A. Wilson. *Oregon Health Sciences University, Portland, OR*

Subcutaneous patches are frequently used with nonthoracotomy implantable cardiac defibrillator (ICD) devices. The effect of these patches on thallium imaging for the evaluation of myocardial ischemia is unknown. This study evaluated the attenuation effects of two commercially available subcutaneous ICD patches on Tl-201 myocardial tomograms. *Methods:* Two sets of post-reinjection Tl-201 tomograms, with and without ICD patches